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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,815	04/08/2005	Moonhor Ree	1751-0380	4409
6449 7590 03/21/2008 ROTHWELL, FIGG, ERNST & MANBECK, P.C. 1425 K STREET, N.W. SUITE 800 WASHINGTON, DC 20005				
EXAMINER				
WINKLER, MELISSA A				
ART UNIT		PAPER NUMBER		
1796				
NOTIFICATION DATE		DELIVERY MODE		
03/21/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-PAT-Email@rfem.com

Office Action Summary

Application No.

10/530,815

Applicant(s)

REE ET AL.

Examiner

MELISSA WINKLER

Art Unit

1796

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 8,9,13,17 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7,10,11 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 4 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/8/06 and 12/19/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of: Group I, Claims 1 – 16, in the reply filed on November 29, 2007 is acknowledged. The election of Formula 2 and $-\text{CONH}-(\text{CH}_2)_3-\text{Si}(\text{OC}_2\text{H}_5)_3$ as X without traverse is further acknowledged. Though not expressly mentioned in the original restriction mentioned, the election of the aforementioned species as X as the hydrolyzable alkoxysilyl group will also be presumed to be the species of hydrolyzable alkoxysilyl group elected in Claim 4.

Claims 8, 9, 13, 17, and 18 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on November 29, 2007.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 3, 5 – 7, 11, and 14 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2001/0055891 to Ko et al. in view of US 5,418,301 to Hult et al.

Regarding Claims 1 – 3, 5, and 6. Ko et al. teach a porous composite comprising an organosilane component (a) and a pore-forming component (b) (Paragraphs 26 - 31). The pore-forming component is an ether with silyl groups, which may further contain an alkoxy group, on its ends (Paragraph 36). The organosilane and pore-forming components may be condensed or hydrolyzed together (Paragraph 37).

The synthesis of the porous composite by heating an organic/inorganic hybrid polymer is a product-by-process limitation that is not further limiting in as so far as the structure of the product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same or obvious from

a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695,698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113. Once a product appearing substantially identical is found, the burden shifts to the applicant to show an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1993).

Ko et al. do not expressly teach the pore-forming ether is a radial polymer. However, Hult et al. teach a radial pore forming polymer comprising a branch portions and a central portion linked to the branch portion (Figure 1). This central portion of the radial pore-forming polymer may be formed by di(trimethylolpropane) (Column 6, Lines 55 - 57). Ko et al. and Hult et al. are analogous art as they are from the same field of endeavor, namely compositions comprising polyethers. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use the ether taught by Hult et al. to form the alkoxysilyl group-terminated pore-forming component taught by Ko et al. The motivation would have been that the polyether taught by Hult et al. is a substantially equivalent alternative to the ether taught by Ko et al. as the pore-forming component in their invention.

Regarding Claim 7. Ko et al. teach the composite of Claim 1. Ko et al., in view of Hult et al., also teach a radial pore-forming polymer but do not expressly teach the

branch portion of the radial pore-forming polymer is prepared by ring-opening polymerization of a compound such as claimed cyclic compound 1A. Consequently, while the Office submits that the reference(s) teach different starting components to make the radial pore-forming polymer, the radial pore-forming polymer with the claimed properties is still intrinsically achieved.

Regarding Claim 11. Ko et al. teach the composite of Claim 1 wherein the organosilicate polymer (a) is formed from one or more organosilane compounds and may be obtained by hydrolysis or condensation of these compounds (Paragraph 37). The silane compound may be a monoalkyltrialkoxysilane, wherein "alkyl" may refer to methyl, ethyl, etc. and "alkoxy" may refer to methoxy, ethoxy, etc. (Paragraphs 32 and 36).

Regarding Claims 14 and 15. Ko et al. teach the composite of Claim 1 wherein organosilicate or the combination of the pore-forming polymer and organosilicate is within the range of 500 to 100,000 grams/mole (Paragraph 40). Ko et al. does not expressly teach the molecular weight of solely the pore-forming polymer. However, the Office submits that it is well known to choose a molecular weight for ingredients such that a film with desirable properties may be obtained.

Regarding Claim 16. Ko et al. teach the composite of Claim 1 wherein, in Example 7, the organosilicate component represents about 27% weight of the composite

and the pore-forming polymer represents about 73% of the composite. However, the experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. *In re Aller*, 105 USPQ 233. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the amount of pore-forming polymer used so that a porosity more suitable in semiconductor devices could be obtained. A prima facie case of obviousness may be rebutted, however, where the results of the optimizing variable, which is known to be result-effective, are unexpectedly good. *In re Boesch and Slaney*, 205 USPQ 215.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2001/0055891 to Ko et al. in view of US 5,418,301 to Hult et al. as applied to Claim 1 above, and further in view of US 2002/0081794 to Ito et al.

Regarding Claim 10. Ko et al. teach the composite of Claim 1 but do not expressly teach the organosilicate polymer is one the claimed compounds. However, Ito teaches a semiconductor device wherein the dielectric layer comprises, for example, hydrogen silsesquioxene (Paragraph 27). Ko et al. and Ito are analogous art as they are from the same field of endeavor, namely dielectric materials used in semiconductor devices. At the time of invention, it would have been obvious to a person of ordinary

skill in the art to use hydrogen silsesquioxene as the organosilicate in the invention of Ko et al. The motivation would have been that the hydrogen silsesquioxene would provide advantages such as a lower dielectric constant in the composite taught by Ko et al.

Allowable Subject Matter

Claims 4 and 12 are objected to as being dependent upon a rejected base claim and containing other non-elected species. However, Claims 4 and 12 would be allowable if a) they were rewritten in independent form including all of the limitations of the base claim and any intervening claims and b) the non-elected species were canceled.

The prior art fails to teach or suggest the addition of the elected hydrolyzable alkoxysilyl group $-\text{CONH}-(\text{CH}_2)_3-\text{Si}(\text{OC}_2\text{H}_5)_3$, ie. species X, to the ends of a radial pore-forming polymer.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA WINKLER whose telephone number is (571)270-3305. The examiner can normally be reached on Monday - Friday 7:30AM - 5PM E.S.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796
3-Mar-08

MW
March 3, 2008